

WHAT IS CLAIMED IS:

1. A method for distributing sets of collision resolution
5 parameters to be used for resolution of network access contention
events among nodes of a non-centralized media access control
shared medium network, comprising:

providing a set of collision resolution parameters which
includes a sequence of fixed numbers for resolving a single
10 network access contention event;

identifying a single collision signal slot master node when
one or more candidate collision signal slot master nodes exist;

sending collision signal slot request messages from client
nodes addressed to all network nodes, wherein a collision signal
15 slot request message includes:

a unique client identifier to indicate source of
request;

an indication that a collision resolution parameter set
is required by a uniquely identified requesting client node; and

20 an indication of number of active packet-generating
channels at the uniquely identified requesting client node;

sending collision signal slot assignment messages from the
master node to the client nodes, wherein a collision signal slot
assignment message includes:

25 a list of unique client identifiers to indicate those
client nodes which can find collision resolution parameter set
information within the collision signal slot assignment message;

a list of collision resolution parameter set
information unambiguously associated on a one-for-one matching
30 basis with the list of unique client identifiers;

obtaining at a given client node from within a received
collision signal slot assignment message a collision resolution
parameter set to be employed by that given client node;

sending collision signal slot acknowledgment messages from
35 client nodes addressed to all network nodes, wherein a collision

signal slot acknowledgment message includes:

5 a unique client identifier to indicate source of the collision signal slot acknowledgment message; and

collision resolution parameter set information currently assigned to the uniquely identified client node; and

10 sending collision signal slot drop messages from client nodes addressed to all network nodes, wherein a collision signal slot drop message includes:

a unique client identifier to indicate source of the collision signal slot drop message; and

15 an indication that a collision resolution parameter set is no longer required by the uniquely identified client node.

2. The method of claim 1, wherein identifying a single collision signal slot master node further includes:

20 advertising in a collision signal slot mastership capability message sent by a candidate for collision signal slot master node an ability to become a collision signal slot master, a collision signal slot mastership capability message being a message sent at a periodic interval indicating an ability of a sending node to become a collision signal slot master, a candidate for collision signal slot master node being a node that has
25 capability to become, or is, a collision signal slot master node; and

resolving a field of multiple collision signal slot mastership candidates to a single collision signal slot master node.

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3. The method of claim 2, wherein resolving a field of multiple collision signal slot mastership candidates to a single collision signal slot master node includes selecting a candidate collision signal slot master node with a lowest valued medium access
35 control address.

4. The method of claim 1, wherein sending collision signal slot request messages from client nodes addressed to all network nodes further includes:

determining based on a change in number of active packet-generating channels whether a collision resolution parameter set is required by the client node; and

10 sending a collision signal slot request message containing a new number of active packet-generating channels.

5. The method of claim 1, wherein sending collision signal slot assignment messages from the master node to the client nodes further includes:

15 determining to send a collision signal slot assignment message if any of the following events occur:

reception of a collision signal slot request message from a uniquely identified client node;

20 reception of a collision signal slot drop message from a uniquely identified client node; or

aging of acknowledgment of any client node assignment; having decided to send a collision signal slot assignment message, choosing a collision resolution parameter set from among the set of collision resolution parameter sets; and

25 sending a collision signal slot assignment message containing the selected collision resolution parameter set to the uniquely identified client node.

30 6. The method of claim 5, wherein choosing a collision resolution parameter set from among the set of collision resolution parameter sets further includes making a prioritized selection based on number of active packet-generating channels at the uniquely identified client node as compared to number of active packet-generating channels at other uniquely identified
35 client nodes.

7. The method of claim 1, wherein sending collision signal slot acknowledgment messages from client nodes addressed to all network nodes further includes:

determining to send a collision signal slot acknowledgment message if any of the following events occur:

reception of a collision signal slot assignment message which contains a client node unique identifier;

expiration of a periodic timer;

client node recognizes an absence of a collision signal slot master, and has self-selected a set of collision resolution parameters; or

client node recognizes in the absence of a collision signal slot master a currently-selected set of collision resolution parameters within a collision signal slot acknowledgment message sent by a different client;

selecting a set of collision resolution parameters to send in the collision signal slot acknowledgment message; and

sending a collision signal slot acknowledgment message containing the selected collision resolution parameter set addressed to all network nodes.

8. The method of claim 7, wherein selecting a set of collision resolution parameters to send in the collision signal slot acknowledgment message further includes:

recognizing absence or presence of a collision signal slot master on the shared medium network;

choosing in a presence of a collision signal slot master on the network the set of collision resolution parameters from the received collision signal slot assignment message which contains the client node unique identifier;

choosing in the absence of a collision signal slot master on the network a set of collision resolution parameters such that the maximum time required for resolution of a single network

access contention event among all client nodes is minimized and making a prioritized selection based on number of active packet-generating channels at the client node as compared to the number of active packet-generating channels at all of other known client nodes.

9. The method of claim 1, wherein sending collision signal slot drop messages from client nodes addressed to all network nodes further includes:

determining to send a collision signal slot drop message if any of the following events occur:

reception of a collision signal slot assignment message from a separate uniquely identified client node and containing the identical collision resolution parameter set as is currently assigned to the client node; or

number of active packet-generating channels at a given client node becomes zero; and

sending a collision signal slot drop message containing a selected collision resolution parameter set, addressed to all network nodes.

10. The method of claim 1, wherein a set of collision resolution parameters includes an ability to specify a random number to be used for any given position within the sequence.

11. The method of claim 1, wherein a set of collision resolution parameters has a common network-wide maximum length such that a maximum length having been reached during resolution of a single network access contention event client nodes revert to the random selection for subsequent steps of the resolution of that single network access contention event.